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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/780,830

02/18/2004

Neal S. Bergano

Bergano 20-CIP4

3768

7590 06/15/2007  
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EXAMINER

WANG, QUAN ZHEN

ART UNIT

PAPER NUMBER

2613

MAIL DATE

DELIVERY MODE

06/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/780,830

Applicant(s)

BERGANO, NEAL S.

Examiner

Quan-Zhen Wang

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27,37-50,56-72 and 74-98 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27,37-50,56-72 and 74-98 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/5/07</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. When applicant files a continuation-in-part whose claims are not supported by the parent application, the effective filing date is the filing date of the child CIP. Any prior art disclosing the invention or an obvious variant thereof having a critical reference date more than 1 year prior to the filing date of the child will bar the issuance of a patent under 35 U.S.C. 102(b). *Paperless Accounting v. Bay Area Rapid Transit System*, 804 F.2d 659, 665, 231 USPQ 649, 653 (Fed. Cir. 1986).

For the instant case, the claimed "DPSK modulation format" is not supported by the parent applications. Therefore, the effective filing date of the claims involving "DPSK modulation format" is the filing data of the current application, February 18, 2004.

### ***Affidavit or Declaration Under 37 CFR 1.131***

2. The Declaration filed on May 15, 2007 under 37 CFR 1.131 is sufficient to overcome the Taga (U.S. Patent US 5,872,647) reference.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 10-13, 16-18, 56, and 64-66 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, "10 Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format", Electron. Lett. Vol. 30, 1994, pages 1694-1695).

Regarding claims 1 and 56, Sano discloses an apparatus comprising: an optical signal source (fig. 1, DBR-LD) configured to generate an optical signal; a data modulator (fig. 1, the second intensity modulator) coupled to said optical signal source and configured to modulate data on said optical signal at a data modulation frequency; and an amplitude modulator (fig. 1, the first intensity modulator) coupled to said optical signal source and configured to provide a periodic modulation of the intensity of said optical signal.

Regarding claims 10 and 64, Sano further teaches that the amplitude modulator is driven by a sinusoidal signal to modulate the intensity of the optical signal (fig. 1).

Regarding claims 11-12, and 65-66, Sano further teaches modulating the intensity of the optical signal at an amplitude modulation frequency phase locked to the data modulation frequency (fig. 1).

Regarding claim 13, Sano further teaches that the data modulation frequency is established by a clock coupled to the amplitude modulator (fig. 1).

Regarding claim 16, Sano further teaches that the amplitude modulator modulates the amplitude of the optical signal at the data modulation frequency with a prescribed phase (fig. 1).

Regarding claim 17-18, Sano further teaches that the system further comprising a clock for establishing the data modulation frequency and an electrical variable-delay line (fig. 1, delay between 10 GHz and PPG) coupling the clock to the amplitude modulator for selectively varying the prescribed phase; and the electrical variable-delay line is a phase shifter.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5-9, 14-15, 19, 31, 58, 60-63, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, "10 Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format", Electron. Lett. Vol. 30, 1994, pages 1694-1695).

Regarding claims 3, 5-8, 19, 58, 60-63, and 67, Sano does not disclose expressly that the modulation depth changes from 20% to 100%. However, it would have been obvious to one having ordinary skill in the art at the time the invention was

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made to use any kind of detector in order to detect the incident beam, where the claimed differences involved to the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. *In re Ruff*, 118, USPQ, 343 (CCPA 1958). This supporting is based on a recognition that the claimed difference exist not a result of an attempt by applicant to solve a problem but merely amounts to selection of expedients known to the artisan of ordinary skill as design choices.

Regarding claim 9, Sano discloses the claimed invention except for that the amplitude modulation is directly coupled to the optical signal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to couple the amplitude modulation through the data modulation, since it has been held that rearranging parts of an-invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claim 14, Sano differs from the claimed invention in that Sano does not specifically teach that the optical signal generator comprises continuous wave generator. However, the Examiner takes Official Notice that it is well known in the art to include a laser in a light source of an optical transmitter. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include continuous wave generator in the light source of Sano in order to generate strong optical signals.

Regarding claim 15, Sano differs from the claimed invention in that Sano does not specifically teach that the optical signal generator comprises a laser. However, the Examiner takes Official Notice that it is well known in the art to include a laser in a light source of an optical transmitter. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include a laser in the light source of Sano in order to generate strong optical signals at a given wavelength.

Regarding claim 31, Sano differs from the claimed invention in that Sano does not specifically teach that the polarization modulator modulates the state of polarization by tracing the polarization of the optical signal along at least a portion of a Poincare sphere. However, as it is admitted by Applicant that it is well known in the art to modulate the state of polarization by tracing the polarization of an optical signal along at least a portion of a Poincare sphere. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to modulate the state of polarization by tracing the polarization of an optical signal along at least a portion of a Poincare sphere in the apparatus of Sano in order to generate polarization independent modulated optical signals.

7. Claims 2, 4, 37-45, 57, 59, and 74-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, "10 Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format", Electron. Lett. Vol. 30, 1994, pages 1694-1695) in view Meissner et al. (U.S. Patent US 5,060,311).

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Regarding claims 2, 4, 57, and 59, Sano has been discussed above in regard with claims 1, 3, and 58. Sano differs from the claimed invention in that Sano does not specifically disclose using a DPSK modulation format for the data modulation. However, it is well known in the art to use a DPSK modulation format for data modulation. For example, Meissner discloses using a DPSK modulation format for the data modulation in an optical communication system (column 1, lines 58-63). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate the data modulation technique of Meissner in the system of Sano in order to simplify the system by eliminating the need for coherent reference signal.

Regarding claims 37-40 and 45, Sano and Meissner do not disclose expressly that the modulation depth changes from 20% to 100%. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use any kind of detector in order to detect the incident beam, where the claimed differences involved to the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. *In re Ruff*, 118, USPQ, 343 (CCPA 1958). This supporting is based on a recognition that the claimed difference exist not a result of an attempt by applicant to solve a problem but merely amounts to selection of expedients known to the artisan of ordinary skill as design choices.



Regarding claim 41, Sano and Meissner discloses the claimed invention except for that the amplitude modulation is directly coupled to the optical signal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to couple the amplitude modulation through the data modulation, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claim 42, Sano further teaches that the amplitude modulator is driven by a sinusoidal signal to modulate the intensity of the optical signal (fig. 1, 10GHz signal).

Regarding claim 43, Sano further teaches that the amplitude modulator modulates the amplitude of the optical signal at the data modulation frequency with a prescribed phase (fig. 1, phase adjusting unit 6).

Regarding claim 44, Sano further teaches that the system further comprising a clock for establishing the data modulation frequency and an electrical variable-delay line (fig. 1, phase adjusting unit 6) coupling the clock to the amplitude modulator for selectively varying the prescribed phase.

Regarding claim 74, Sano has been discussed above in regard with claims 1 and 56. Sano differs from the claimed invention in that Sano does not specifically disclose that the system includes a receiver. However, it is well known in the art to include a receiver to receive signals in a communication system. For example, Meissner discloses a receiver to receive signals in a communication system (fig. 1). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the

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invention was made to incorporate a receiver, as it is taught by Meissner with the system of Sano in order to receiver the transmitted signals.

Regarding claims 75, 77, and 86, Sano has been discusses above in regard with claims 1, 3, and 58. Sano differs from the claimed invention in that Sano does not specifically disclose using a DPSK modulation format for the data modulation. However, it is well known in the art to use a DPSK modulation format for data modulation. For example, Meissner discloses using a DPSK modulation format for the data modulation in an optical communication system (column 1, lines 58-63). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate the data modulation technique of Meissner in the system of Sano in order to simplify the system by eliminating the need for coherent reference signal.

Regarding claims 76, 78-81, and 87 Sano does not disclose expressly that the modulation depth changes from 20% to 100%. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use any kind of detector in order to detect the incident beam, where the claimed differences involved to the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. *In re Ruff*, 118, USPQ, 343 (CCPA 1958). This supporting is based on a recognition that the claimed difference exist not a result of an attempt by applicant to solve a problem but merely

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amounts to selection of expedients known to the artisan of ordinary skill as design choices.

Regarding claim 82, Sano further teaches that the amplitude modulator is driven by a sinusoidal signal to modulate the intensity of the optical signal (fig. 1, 10GHz).

Regarding claims 83-84, Sano further teaches modulating the intensity of the optical signal at an amplitude modulation frequency phase locked to the data modulation frequency (fig. 1).

Regarding claim 85, the modified system of Sano and Meissner further discloses means for transmitting predetermined characteristic to the transmitter (Sano: fig. 1), and means for selectively varying the periodic modulation imparted to the optical signal (Sano: fig. 1, phase adjusting unit 6); and means for measuring characteristic of the received signal (Meissner: fig. 1, DEM).

Regarding claims 88-89, Sano further discloses that signal-to-noise-ratio and Q-factor (Q-value) are used for the predetermined characteristic.

8. Claims 20, 22-27, and 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, "10 Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format", Electron. Lett. Vol. 30, 1994, pages 1694-1695) in view of Kitajima et al. (U.S. Patent US 5,515,196).

Regarding claims 20, and 69, Sano differs from the claimed invention in that Sano does not specifically teach that the system further comprises a phase modulator

coupled to the data modulator, the phase modulator configured to provide optical phase modulation to the optical signal. However, it is well known in the art to include a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted. For example, Kitajima discloses an optical transmitter apparatus comprising a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted (fig. 13). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a phase modulator, as it is taught by Kitajima, in the optical transmitter apparatus of Sano to modulate the phase of the optical signal to be transmitted in order to reduce the time jitter of the optical signal caused by the influence of dispersion.

Regarding claims 22-24, and 70-71, Kitajima further teaches that the apparatus further comprising a clock for establishing the data modulation frequency, and wherein the clock is coupled to the phase modulator so that the phase modulator provides optical phase modulation at a frequency that is phase locked and equal to the data modulation frequency (fig. 13).

Regarding claims 25-27, and 72, the modified system of the modified system of Sano and Kitajima differs from the claimed invention in that Sano and Kitajima do not specifically disclose that the apparatus further comprising an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation. However, Sano

discloses an electrical variable-delay line coupling the clock to the amplitude modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter (fig. 1). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation in order to synchronize the data modulation and the phase modulation.

9. Claims 46-50, and 90-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, "10 Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format", Electron. Lett. Vol. 30, 1994, pages 1694-1695) in view of Meissner et al. (U.S. Patent US 5,060,311) and further in view of Kitajima et al. (U.S. Patent US 5,515,196).

Regarding claim 46, the modified system of Sano and Meissner differs from the claimed invention in that Sano and Meissner do not specifically teach that the system further comprises a phase modulator coupled to the data modulator, the phase modulator configured to provide optical phase modulation to the optical signal. However, it is well known in the art to include a phase modulator in an optical

transmitter to modulate the phase of the optical signal to be transmitted. For example, Kitajima discloses an optical transmitter apparatus comprising a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted (fig. 13). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a phase modulator, as it is taught by Kitajima, in the modified system of Sano and Meissner to modulate the phase of the optical signal to be transmitted in order to reduce the time jitter of the optical signal caused by the influence of dispersion.

Regarding claims 47-48, Kitajima further teaches that the apparatus further comprising a clock for establishing the data modulation frequency, and wherein the clock is coupled to the phase modulator so that the phase modulator provides optical phase modulation at a frequency that is phase locked and equal to the data modulation frequency (fig. 13).

Regarding claims 49-50, the modified system of the modified system of Sano, Meissner, and Kitajima differs from the claimed invention in that Sano, Meissner, and Kitajima do not specifically disclose that the apparatus further comprising an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation. However, Sano discloses an electrical variable-delay line coupling the clock to the amplitude modulator for selectively varying the phase of the optical phase modulation

provided by the phase modulator, and the electrical variable-delay line is a phase shifter (fig. 1). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation in order to synchronize the data modulation and the phase modulation.

Regarding claim 90, Sano and Meissner differ from the claimed invention in that Sano and Meissner do not specifically teach that the system further comprises a phase modulator coupled to the data modulator, the phase modulator configured to provide optical phase modulation to the optical signal. However, it is well known in the art to include a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted. For example, Kitajima discloses an optical transmitter apparatus comprising a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted (fig. 13). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a phase modulator, as it is taught by Kitajima, in the optical transmitter apparatus of Sano and Meissner to modulate the phase of the optical signal to be transmitted in order to reduce the time jitter of the optical signal caused by the influence of dispersion.

Regarding claims 91-92, Kitajima further teaches that the apparatus further comprising a clock for establishing the data modulation frequency, and wherein the clock is coupled to the phase modulator so that the phase modulator provides optical phase modulation at a frequency that is phase locked and equal to the data modulation frequency (fig. 13).

Regarding claim 93 Sano does not disclose expressly that the modulation depth changes from 20% to 100%. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use any kind of detector in order to detect the incident beam, where the claimed differences involved to the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. *In re Ruff*, 118, USPQ, 343 (CCPA 1958). This supporting is based on a recognition that the claimed difference exist not a result of an attempt by applicant to solve a problem but merely amounts to selection of expedients known to the artisan of ordinary skill as design choices.

Regarding claim 94, the modified system of the modified system of Sano, Meissner and Kitajima differs from the claimed invention in that Sano, Meissner and Kitajima do not specifically disclose that the apparatus further comprising an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase



modulation at a frequency that is phase locked and equal to the data modulation.

However, Sano discloses an electrical variable-delay line coupling the clock to the amplitude modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation in order to synchronize the data modulation and the phase modulation.

Regarding claim 95, the modified system of Sano and Meissner further discloses means for transmitting predetermined characteristic to the transmitter (Sano: fig. 1), and means for selectively varying the periodic modulation imparted to the optical signal; and means for measuring characteristic of the received signal (Meissner: fig. 1, DEM).

Regarding claim 96, Meissner further discloses using a DPSK modulation format for the data modulation in an optical communication system (column 1, lines 58-63).

Regarding claims 97-98, Sano further discloses that signal-to-noise-ratio and Q-factor (Q-value) are used for the predetermined characteristic.

10. Claims 21, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, "10

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Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format", *Electron. Lett.* Vol. 30, 1994, pages 1694-1695) in view of Kitajima et al. (U.S. Patent US 5,515,196) and further in view of Takayama et al. (K. Takayama et al., "An all-optical 10-GHz LD-based clock regenerator using a Mach-Zehnder interferometer-type NRZ-RZ converter", *Tech digest of ECOC '91*, vol. MoC1-2, pp. 77-80, September 1991).

Regarding claims 21 and 68, the modified system of Sano and Kitajima discloses the claimed invention except that Sano and Kitajima do not specifically teach that the polarization modulator is coupled to the data modulator through the amplitude modulator. However, it is well known in the art to use an amplitude modulator following a data modulator. For example, Takayama discloses that the amplitude modulator (fig. 1, Mach-Zehnder interferometer) is arranged to follow the data modulator (not shown in the figure). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to arrange the amplitude modulator following the data modulator in the modified system of Sano and Kitajima, and, therefore, the polarization modulator is coupled to the data modulator through the amplitude modulator. One ordinary skill in the art would be motivated to do so in order to generate RZ signals from NRZ signals.

### ***Double Patenting***

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11. Claims 1 and 56 are provisionally rejected on the ground of nonstatutory double patenting over claim 45 of copending Application No. 10/689484. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Although the conflicting claims are not identical, they are not patentably distinct from each other because claims in the continuation are broader than the patented claims, *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982) and *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993), broad claims in the instant application are rejected as obvious double patenting over narrow claims of copending Application. For example, claim 1 of the present invention does not claim the specific features of "said optical signal at an amplitude modulation frequency phase locked to said data modulation frequency, said data modulation frequency being provided by a clock coupled to said amplitude modulator and said data modulator". Therefore, claims 1 and 56 of the instant invention are broader than claim 45 of the copending Application.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Edagawa et al. (N. Edagawa et al., "Robustness of 20 Gbit/s, 100 km-spacing, 1000 km solution transmission system", Electron. Lett. Vol. 31, 1995, pages 663-665) disclose a transmitter comprising a data modulator and amplitude modulator.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

qzw  
6/7//2007



**JASON CHAN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**